

Appendix A – Data: Baseline and Portfolio Cases

EERE Baseline Case

Table 1. Energy Consumption by Sector and Source
(Quadrillion Btu per Year, Unless Otherwise Noted)

| Energy Consumption | 2005 | 2010 | 2015 | 2020 |
|-------------------------------|-------|-------|-------|-------|
| Residential | | | | |
| Distillate Fuel | 0.85 | 0.79 | 0.75 | 0.72 |
| Kerosene | 0.08 | 0.07 | 0.07 | 0.07 |
| Liquefied Petroleum Gas | 0.44 | 0.45 | 0.43 | 0.41 |
| Petroleum Subtotal | 1.37 | 1.31 | 1.25 | 1.20 |
| Natural Gas | 5.54 | 5.70 | 5.94 | 6.18 |
| Coal | 0.05 | 0.05 | 0.05 | 0.05 |
| Renewable Energy 1/ | 0.43 | 0.43 | 0.44 | 0.45 |
| Electricity | 4.54 | 4.76 | 5.09 | 5.44 |
| Delivered Energy | 11.92 | 12.25 | 12.76 | 13.31 |
| Electricity Related Losses... | 9.53 | 9.51 | 9.85 | 10.22 |
| Total | 21.46 | 21.77 | 22.61 | 23.53 |
| Commercial | | | | |
| Distillate Fuel | 0.42 | 0.42 | 0.42 | 0.42 |
| Residual Fuel | 0.12 | 0.12 | 0.13 | 0.13 |
| Kerosene | 0.03 | 0.03 | 0.03 | 0.03 |
| Liquefied Petroleum Gas | 0.08 | 0.09 | 0.09 | 0.10 |
| Motor Gasoline 2/ | 0.03 | 0.03 | 0.03 | 0.03 |
| Petroleum Subtotal | 0.67 | 0.69 | 0.70 | 0.71 |
| Natural Gas | 3.78 | 4.08 | 4.43 | 4.82 |
| Coal | 0.07 | 0.07 | 0.07 | 0.08 |
| Renewable Energy 3/ | 0.08 | 0.08 | 0.08 | 0.08 |
| Electricity | 4.45 | 4.99 | 5.53 | 6.01 |
| Delivered Energy | 9.04 | 9.90 | 10.81 | 11.69 |
| Electricity Related Losses... | 9.33 | 9.97 | 10.70 | 11.30 |
| Total | 18.37 | 19.87 | 21.51 | 22.99 |
| Industrial 4/ | | | | |
| Distillate Fuel | 1.17 | 1.22 | 1.29 | 1.38 |
| Liquefied Petroleum Gas | 2.50 | 2.66 | 2.85 | 3.00 |
| Petrochemical Feedstocks | 1.36 | 1.45 | 1.54 | 1.59 |
| Residual Fuel | 0.18 | 0.23 | 0.25 | 0.27 |
| Motor Gasoline 2/ | 0.23 | 0.24 | 0.26 | 0.27 |
| Other Petroleum 5/ | 4.36 | 4.77 | 4.99 | 5.17 |
| Petroleum Subtotal | 9.80 | 10.57 | 11.18 | 11.69 |
| Natural Gas 6/ | 10.42 | 11.19 | 11.79 | 12.19 |
| Metallurgical Coal | 0.69 | 0.64 | 0.59 | 0.54 |
| Steam Coal | 1.72 | 1.74 | 1.79 | 1.86 |
| Net Coal Coke Imports | 0.07 | 0.11 | 0.14 | 0.16 |
| Coal Subtotal | 2.48 | 2.50 | 2.52 | 2.55 |
| Renewable Energy 7/ | 2.66 | 2.89 | 3.18 | 3.43 |
| Electricity | 3.80 | 4.19 | 4.53 | 4.82 |
| Delivered Energy | 29.17 | 31.34 | 33.20 | 34.69 |
| Electricity Related Losses... | 7.97 | 8.39 | 8.77 | 9.07 |
| Total | 37.13 | 39.73 | 41.97 | 43.76 |

1/ Includes wood used for residential heating.

2/ Includes ethanol (blends of 10 percent or less) and ethers blended into gasoline.

3/ Includes commercial sector electricity cogenerated by using wood and wood waste, landfill gas, municipal solid waste, and other biomass.

4/ Fuel consumption includes consumption for cogeneration.

5/ Includes petroleum coke, asphalt, road oil, lubricants, still gas, and miscellaneous petroleum products.

6/ Includes lease and plant fuel and consumption by cogenerators; excludes consumption by nonutility generators.

7/ Includes consumption of energy from hydroelectric, wood and wood waste, municipal solid waste, and other biomass; includes cogeneration, both for sale to the grid and for own use.

| | 2005 | 2010 | 2015 | 2020 |
|-------------------------------|--------|--------|--------|--------|
| Transportation | | | | |
| Distillate Fuel | 6.35 | 7.27 | 8.09 | 8.71 |
| Jet Fuel 8/ | 3.88 | 4.46 | 5.12 | 5.82 |
| Motor Gasoline 2/ | 17.68 | 19.36 | 20.92 | 22.20 |
| Residual Fuel | 1.07 | 1.08 | 1.09 | 1.10 |
| Liquefied Petroleum Gas | 0.02 | 0.02 | 0.02 | 0.03 |
| Other Petroleum 9/ | 0.25 | 0.26 | 0.28 | 0.29 |
| Petroleum Subtotal | 29.23 | 32.44 | 35.52 | 38.16 |
| Pipeline Fuel Natural Gas | 0.79 | 0.86 | 0.95 | 1.02 |
| Compressed Natural Gas | 0.06 | 0.09 | 0.12 | 0.14 |
| Renewable Energy (E85) 10/... | 0.02 | 0.03 | 0.03 | 0.04 |
| Liquid Hydrogen | 0.00 | 0.00 | 0.00 | 0.00 |
| Electricity | 0.07 | 0.08 | 0.09 | 0.11 |
| Delivered Energy | 30.18 | 33.50 | 36.72 | 39.47 |
| Electricity Related Losses... | 0.15 | 0.16 | 0.18 | 0.20 |
| Total | 30.32 | 33.66 | 36.90 | 39.68 |
| Electric Generators 13/ | | | | |
| Distillate Fuel | 0.06 | 0.05 | 0.05 | 0.07 |
| Residual Fuel | 0.23 | 0.14 | 0.19 | 0.21 |
| Petroleum Subtotal | 0.30 | 0.19 | 0.24 | 0.28 |
| Natural Gas | 5.45 | 6.78 | 8.83 | 10.21 |
| Steam Coal | 21.34 | 22.54 | 23.17 | 24.09 |
| Nuclear Power | 8.10 | 7.87 | 7.49 | 7.44 |
| Renewable Energy 14/ | 4.12 | 4.29 | 4.54 | 4.72 |
| Electricity Imports | 0.52 | 0.38 | 0.45 | 0.44 |
| Total | 39.82 | 42.05 | 44.73 | 47.17 |
| Total Energy Consumption | | | | |
| Distillate Fuel | 8.84 | 9.74 | 10.60 | 11.30 |
| Kerosene | 0.13 | 0.13 | 0.12 | 0.12 |
| Jet Fuel 8/ | 3.88 | 4.46 | 5.12 | 5.82 |
| Liquefied Petroleum Gas | 3.04 | 3.22 | 3.39 | 3.54 |
| Motor Gasoline 2/ | 17.94 | 19.62 | 21.20 | 22.50 |
| Petrochemical Feedstocks | 1.36 | 1.45 | 1.54 | 1.59 |
| Residual Fuel | 1.60 | 1.58 | 1.66 | 1.72 |
| Other Petroleum 12/ | 4.59 | 5.01 | 5.25 | 5.44 |
| Petroleum Subtotal | 41.37 | 45.21 | 48.88 | 52.04 |
| Natural Gas | 26.04 | 28.69 | 32.07 | 34.55 |
| Metallurgical Coal | 0.69 | 0.64 | 0.59 | 0.54 |
| Steam Coal | 23.17 | 24.40 | 25.08 | 26.07 |
| Net Coal Coke Imports | 0.07 | 0.11 | 0.14 | 0.16 |
| Coal Subtotal | 23.93 | 25.16 | 25.81 | 26.77 |
| Nuclear Power | 8.10 | 7.87 | 7.49 | 7.44 |
| Renewable Energy 15/ | 7.31 | 7.72 | 8.28 | 8.71 |
| Liquid Hydrogen | 0.00 | 0.00 | 0.00 | 0.00 |
| Electricity Imports | 0.52 | 0.38 | 0.45 | 0.44 |
| Total | 107.28 | 115.03 | 122.99 | 129.95 |

8/ Includes only kerosene type.

9/ Includes aviation gas and lubricants.

10/ E85 is 85 percent ethanol (renewable) and 15 percent motor gasoline (nonrenewable).

11/ M85 is 85 percent methanol and 15 percent motor gasoline.

12/ Includes unfinished oils, natural gasoline, motor gasoline blending compounds, aviation gasoline, lubricants, still gas, asphalt, road oil, petroleum coke, and miscellaneous petroleum products.

13/ Includes consumption of energy by all electric power generators for grid-connected power except cogenerators, which produce electricity and other useful thermal energy. Includes small power producers and exempt wholesale generators.

14/ Includes conventional hydroelectric, geothermal, wood and wood waste, municipal solid waste, other biomass, petroleum coke, wind, photovoltaic and solar thermal sources. Excludes cogeneration. Excludes net electricity imports.

17/ Includes hydroelectric, geothermal, wood and wood waste, municipal solid waste, other biomass, wind, photovoltaic and solar thermal sources. Includes ethanol components of E85; excludes ethanol blends (10 percent or less) in motor gasoline. Excludes net electricity imports and nonmarketed renewable energy consumption for geothermal heat pumps, buildings photovoltaic systems, and solar thermal hot water heaters.

Table 2. Energy Prices by Sector and Source
(2000 Dollars per Million Btu, Unless Otherwise Noted)

| | 2005 | 2010 | 2015 | 2020 |
|---------------------------|-------|-------|-------|-------|
| Residential | 13.26 | 13.41 | 13.54 | 13.91 |
| Primary Energy 1/ | 7.30 | 7.24 | 7.37 | 7.49 |
| Petroleum Products 2/ | 9.45 | 9.85 | 10.30 | 10.42 |
| Distillate Fuel | 7.68 | 7.94 | 8.43 | 8.55 |
| Liquefied Petroleum Gas.. | 12.90 | 13.26 | 13.64 | 13.80 |
| Natural Gas | 6.81 | 6.70 | 6.81 | 6.96 |
| Electricity | 22.40 | 22.56 | 22.31 | 22.70 |
| Commercial | 12.83 | 12.78 | 12.97 | 13.31 |
| Primary Energy 1/ | 5.58 | 5.55 | 5.74 | 5.92 |
| Petroleum Products 2/ | 6.10 | 6.36 | 6.77 | 6.92 |
| Distillate Fuel | 5.44 | 5.73 | 6.25 | 6.40 |
| Residual Fuel | 3.74 | 3.83 | 3.92 | 4.02 |
| Natural Gas 3/ | 5.55 | 5.48 | 5.64 | 5.84 |
| Electricity | 20.19 | 19.80 | 19.78 | 20.21 |
| Industrial 4/ | 5.71 | 5.97 | 6.27 | 6.48 |
| Primary Energy | 4.48 | 4.75 | 5.04 | 5.19 |
| Petroleum Products 2/ | 6.36 | 6.70 | 7.08 | 7.13 |
| Distillate Fuel | 5.54 | 5.89 | 6.52 | 6.72 |
| Liquefied Petroleum Gas.. | 8.28 | 8.60 | 8.99 | 9.11 |
| Residual Fuel | 3.57 | 3.65 | 3.74 | 3.87 |
| Natural Gas 5/ | 3.26 | 3.44 | 3.66 | 3.90 |
| Metallurgical Coal | 1.60 | 1.56 | 1.52 | 1.46 |
| Steam Coal | 1.35 | 1.29 | 1.26 | 1.21 |
| Electricity | 12.67 | 12.56 | 12.66 | 13.05 |
| Transportation | 9.59 | 9.98 | 10.03 | 9.99 |
| Primary Energy | 9.58 | 9.96 | 10.01 | 9.97 |
| Petroleum Products 2/ | 9.58 | 9.96 | 10.01 | 9.97 |
| Distillate Fuel 6/ | 9.23 | 10.14 | 10.09 | 9.97 |
| Jet Fuel 7/ | 5.53 | 5.87 | 6.32 | 6.37 |
| Motor Gasoline 8/ | 11.04 | 11.27 | 11.28 | 11.29 |
| Residual Fuel | 3.40 | 3.48 | 3.57 | 3.67 |
| Liquefied Petroleum Gas9/ | 14.09 | 14.39 | 14.66 | 14.62 |
| Natural Gas 10/ | 6.58 | 6.83 | 7.06 | 7.23 |
| Ethanol (E85) 11/ | 19.20 | 20.58 | 21.07 | 21.19 |
| Electricity | 16.68 | 18.37 | 19.42 | 18.04 |

1/ Weighted average price includes fuels below as well as coal.

2/ This quantity is the weighted average for all petroleum products, not just those listed below.

3/ Excludes independent power producers.

4/ Includes cogenerators.

5/ Excludes uses for lease and plant fuel.

6/ Low sulfur diesel fuel. Price includes Federal and State taxes while excluding county and local taxes.

7/ Kerosene-type jet fuel. Price includes Federal and State taxes while excluding county and local taxes.

8/ Sales weighted-average price for all grades. Includes Federal and State taxes and excludes county and local taxes.

9/ Includes Federal and State taxes while excluding county and local taxes.

10/ Compressed natural gas used as a vehicle fuel. Price includes estimated motor vehicle fuel taxes.

11/ E85 is 85 percent ethanol (renewable) and 15 percent motor gasoline (nonrenewable).

Table 2. Energy Prices by Sector and Source (cont.)
(2000 Dollars per Million Btu, Unless Otherwise Noted)

| | 2005 | 2010 | 2015 | 2020 |
|--|--------|--------|--------|--------|
| Electric Generators 13/ | | | | |
| Fossil Fuel Average | 1.57 | 1.60 | 1.75 | 1.85 |
| Petroleum Products | 3.82 | 3.99 | 4.13 | 4.27 |
| Distillate Fuel | 4.93 | 5.23 | 5.72 | 5.86 |
| Residual Fuel | 3.52 | 3.59 | 3.67 | 3.78 |
| Natural Gas | 3.16 | 3.34 | 3.62 | 3.86 |
| Steam Coal | 1.13 | 1.05 | 1.02 | 0.97 |
| Average Price to All Users 14/ | | | | |
| Petroleum Products 2/ | 8.79 | 9.20 | 9.35 | 9.35 |
| Distillate Fuel | 8.38 | 9.22 | 9.36 | 9.33 |
| Jet Fuel | 5.53 | 5.87 | 6.32 | 6.37 |
| Liquefied Petroleum Gas | 9.04 | 9.35 | 9.68 | 9.76 |
| Motor Gasoline 8/ | 11.04 | 11.27 | 11.28 | 11.29 |
| Residual Fuel | 3.46 | 3.54 | 3.64 | 3.74 |
| Natural Gas | 4.43 | 4.45 | 4.59 | 4.79 |
| Coal | 1.15 | 1.07 | 1.04 | 0.99 |
| Ethanol (E85) 11/ | 19.20 | 20.58 | 21.07 | 21.19 |
| Electricity | 18.73 | 18.56 | 18.50 | 18.91 |
| Non-Renewable Energy Expend. by Sector (billion 2000 dollars) | | | | |
| Residential | 152.47 | 158.48 | 166.83 | 178.97 |
| Commercial | 114.93 | 125.57 | 139.21 | 154.63 |
| Industrial | 123.62 | 135.95 | 150.35 | 162.48 |
| Transportation | 281.54 | 325.22 | 358.20 | 383.42 |
| Total Non-Renewable Expend... | 672.56 | 745.21 | 814.59 | 879.50 |
| Trans. Renew. Expenditures... | 0.40 | 0.58 | 0.73 | 0.84 |
| Total Expenditures | 672.96 | 745.79 | 815.32 | 880.34 |

2/ This quantity is the weighted average for all petroleum products, not just those listed below.

8/ Sales weighted-average price for all grades. Includes Federal and State taxes and excludes county and local taxes.

11/ E85 is 85 percent ethanol (renewable) and 15 percent motor gasoline (nonrenewable).

13/ Includes all electric power generators except cogenerators, which produce electricity and other useful thermal energy. Includes small power producers and exempt wholesale generators.

14/ Weighted averages of end-use fuel prices are derived from the prices shown in each sector and the corresponding sectoral consumption.

Table 3. Renewable Energy Generating Capability and Generation
(Gigawatts, Unless Otherwise Noted)

| | 2005 | 2010 | 2015 | 2020 |
|----------------------------------|--------|--------|--------|--------|
| Elect.Generators (excl.cogen) 1/ | | | | |
| Net Summer Capability | | | | |
| Conventional Hydropower | 79.13 | 78.55 | 78.46 | 78.36 |
| Geothermal 2/ | 3.05 | 3.46 | 4.41 | 5.09 |
| Municipal Solid Waste 3/ | 3.50 | 3.83 | 4.08 | 4.26 |
| Wood and Other Biomass 4/ | 1.61 | 1.73 | 1.78 | 1.91 |
| Solar Thermal | 0.34 | 0.36 | 0.39 | 0.41 |
| Solar Photovoltaic | 0.05 | 0.11 | 0.19 | 0.27 |
| Wind | 6.82 | 7.70 | 8.40 | 8.81 |
| Total | 95.16 | 97.08 | 99.15 | 100.65 |
| Generation (billion kwh) | | | | |
| Conventional Hydropower | 295.49 | 288.76 | 286.99 | 285.87 |
| Geothermal 2/ | 15.67 | 19.25 | 27.10 | 32.88 |
| Municipal Solid Waste 3/ | 24.90 | 27.41 | 29.22 | 30.60 |
| Wood and Other Biomass 4/ | 14.56 | 20.23 | 17.92 | 14.60 |
| Dedicated Plants | 8.93 | 9.72 | 10.02 | 10.85 |
| Cofiring | 5.63 | 10.51 | 7.90 | 3.75 |
| Solar Thermal | 0.90 | 0.96 | 1.05 | 1.12 |
| Solar Photovoltaic | 0.11 | 0.26 | 0.46 | 0.68 |
| Wind | 16.74 | 19.62 | 21.74 | 23.21 |
| Total | 368.37 | 376.49 | 384.48 | 388.96 |
| Cogenerators 5/ | | | | |
| Net Summer Capability | | | | |
| Municipal Solid Waste | 0.51 | 0.51 | 0.51 | 0.51 |
| Biomass | 5.92 | 6.64 | 7.62 | 8.43 |
| Total | 6.43 | 7.15 | 8.13 | 8.94 |
| Generation (billion kwh) | | | | |
| Municipal Solid Waste | 3.29 | 3.29 | 3.29 | 3.29 |
| Biomass | 33.73 | 38.05 | 44.05 | 48.99 |
| Total | 37.02 | 41.34 | 47.34 | 52.29 |
| Other End-Use Generators 6/ | | | | |
| Net Summer Capability | | | | |
| Conventional Hydropower 7/... | 0.98 | 0.98 | 0.98 | 0.98 |
| Geothermal | 0.00 | 0.00 | 0.00 | 0.00 |
| Solar Photovoltaic | 0.08 | 0.08 | 0.08 | 0.08 |
| Total | 1.06 | 1.06 | 1.06 | 1.06 |
| Generation (billion kwh) | | | | |
| Conventional Hydropower 7/... | 4.26 | 4.17 | 4.15 | 4.13 |
| Geothermal | 0.00 | 0.00 | 0.00 | 0.00 |
| Solar Photovoltaic | 0.18 | 0.18 | 0.18 | 0.18 |
| Total | 4.44 | 4.34 | 4.32 | 4.31 |

1/ Includes grid-connected utilities and nonutilities other than cogenerators.
small power producers and exempt wholesale generators.

These nonutility facilities include

2/ Includes hydrothermal resources only (hot water and steam).

3/ Includes landfill gas.

4/ Includes projections for energy crops after 2010.

5/ Cogenerators produce electricity and other useful thermal energy.

6/ Includes small on-site generating systems in the residential, commercial, and industrial sectors used primarily for own-use generation, but which may also sell some power to the grid. Excludes off-grid photovoltaics and other generators not connected to the distribution or transmission systems.

7/ Represents own-use industrial hydroelectric power.

Table 4. Carbon Dioxide Emissions by Sector and Source
(Million Metric Tons Carbon Equivalent, Unless Otherwise Noted)

| | 2005 | 2010 | 2015 | 2020 |
|--------------------------|--------|--------|--------|--------|
| Residential | | | | |
| Petroleum | 25.9 | 24.6 | 23.4 | 22.6 |
| Natural Gas | 79.7 | 82.1 | 85.5 | 89.0 |
| Coal | 1.2 | 1.3 | 1.3 | 1.3 |
| Electricity | 222.9 | 230.5 | 242.6 | 255.9 |
| Total | 329.7 | 338.6 | 352.8 | 368.7 |
| Commercial | | | | |
| Petroleum | 13.2 | 13.5 | 13.8 | 14.0 |
| Natural Gas | 54.4 | 58.7 | 63.9 | 69.4 |
| Coal | 1.7 | 1.8 | 1.9 | 2.0 |
| Electricity | 218.2 | 241.7 | 263.5 | 282.9 |
| Total | 287.5 | 315.7 | 343.0 | 368.2 |
| Industrial 1/ | | | | |
| Petroleum | 98.6 | 107.2 | 112.8 | 117.8 |
| Natural Gas 2/ | 147.6 | 158.5 | 167.0 | 172.5 |
| Coal | 63.0 | 63.3 | 63.8 | 64.7 |
| Electricity | 186.4 | 203.3 | 215.9 | 227.1 |
| Total | 495.6 | 532.3 | 559.5 | 582.1 |
| Transportation | | | | |
| Petroleum 3/ | 560.2 | 622.1 | 681.0 | 731.6 |
| Natural Gas 4/ | 12.2 | 13.6 | 15.4 | 16.7 |
| Other 5/ | 0.1 | 0.1 | 0.1 | 0.1 |
| Electricity | 3.4 | 3.8 | 4.4 | 5.1 |
| Total 3/ | 575.9 | 639.7 | 700.9 | 753.5 |
| Total by Delivered Fuel | | | | |
| Petroleum 3/ | 697.9 | 767.5 | 831.0 | 885.9 |
| Natural Gas | 294.0 | 313.0 | 331.8 | 347.5 |
| Coal | 65.9 | 66.4 | 67.0 | 68.0 |
| Other 5/ | 0.1 | 0.1 | 0.1 | 0.1 |
| Electricity | 630.9 | 679.3 | 726.4 | 771.1 |
| Total 3/ | 1688.7 | 1826.3 | 1956.2 | 2072.6 |
| Electric Generators 6/ | | | | |
| Petroleum | 6.2 | 4.0 | 5.1 | 5.8 |
| Natural Gas | 78.5 | 97.6 | 127.2 | 147.0 |
| Coal | 546.2 | 577.7 | 594.1 | 618.3 |
| Total | 630.9 | 679.3 | 726.4 | 771.1 |
| Total by Primary Fuel 7/ | | | | |
| Petroleum 3/ | 704.1 | 771.4 | 836.1 | 891.7 |
| Natural Gas | 372.4 | 410.6 | 459.0 | 494.5 |
| Coal | 612.1 | 644.1 | 661.1 | 686.3 |
| Other 5/ | 0.1 | 0.1 | 0.1 | 0.1 |
| Total 3/ | 1688.7 | 1826.3 | 1956.2 | 2072.6 |

1/ Includes consumption by cogenerators.

2/ Includes lease and plant fuel.

3/ This includes international bunker fuel which, by convention are excluded from the international accounting of carbon dioxide emissions.

4/ Includes pipeline fuel natural gas and compressed natural gas used as vehicle fuel.

5/ Includes methanol and liquid hydrogen.

6/ Includes all electric power generators except cogenerators, which produce electricity and other useful thermal energy. Includes small power producers and exempt wholesale generators. Does not include emissions from the nonbiogenic component of municipal solid waste because under international guidelines these are accounted for as waste not energy.

7/ Emissions from electric power generators are distributed to the primary fuels.

EERE Portfolio Case

Table 1. Energy Consumption by Sector and Source
(Quadrillion Btu per Year, Unless Otherwise Noted)

| Energy Consumption | 2005 | 2010 | 2015 | 2020 |
|-------------------------------|-------|-------|-------|-------|
| Residential | | | | |
| Distillate Fuel | 0.85 | 0.77 | 0.71 | 0.67 |
| Kerosene | 0.08 | 0.07 | 0.07 | 0.06 |
| Liquefied Petroleum Gas | 0.44 | 0.44 | 0.41 | 0.38 |
| Petroleum Subtotal | 1.37 | 1.28 | 1.19 | 1.12 |
| Natural Gas | 5.52 | 5.63 | 5.73 | 5.88 |
| Coal | 0.05 | 0.05 | 0.05 | 0.05 |
| Renewable Energy 1/ | 0.43 | 0.43 | 0.43 | 0.43 |
| Electricity | 4.48 | 4.56 | 4.78 | 5.05 |
| Delivered Energy | 11.84 | 11.95 | 12.19 | 12.52 |
| Electricity Related Losses... | 9.40 | 9.30 | 9.66 | 10.10 |
| Total | 21.25 | 21.25 | 21.85 | 22.62 |
| Commercial | | | | |
| Distillate Fuel | 0.41 | 0.40 | 0.38 | 0.37 |
| Residual Fuel | 0.12 | 0.12 | 0.13 | 0.13 |
| Kerosene | 0.03 | 0.03 | 0.03 | 0.03 |
| Liquefied Petroleum Gas | 0.08 | 0.09 | 0.09 | 0.10 |
| Motor Gasoline 2/ | 0.03 | 0.03 | 0.03 | 0.03 |
| Petroleum Subtotal | 0.67 | 0.67 | 0.66 | 0.67 |
| Natural Gas | 3.82 | 4.21 | 4.67 | 5.28 |
| Coal | 0.07 | 0.07 | 0.07 | 0.08 |
| Renewable Energy 3/ | 0.08 | 0.08 | 0.08 | 0.08 |
| Electricity | 4.43 | 4.87 | 5.26 | 5.58 |
| Delivered Energy | 9.06 | 9.89 | 10.75 | 11.68 |
| Electricity Related Losses... | 9.29 | 9.92 | 10.63 | 11.17 |
| Total | 18.35 | 19.81 | 21.37 | 22.84 |
| Industrial 4/ | | | | |
| Distillate Fuel | 1.14 | 1.14 | 1.11 | 1.05 |
| Liquefied Petroleum Gas | 2.49 | 2.61 | 2.76 | 2.83 |
| Petrochemical Feedstocks | 1.34 | 1.38 | 1.39 | 1.29 |
| Residual Fuel | 0.18 | 0.23 | 0.24 | 0.22 |
| Motor Gasoline 2/ | 0.23 | 0.24 | 0.26 | 0.28 |
| Other Petroleum 5/ | 4.35 | 4.76 | 4.96 | 5.16 |
| Petroleum Subtotal | 9.74 | 10.37 | 10.72 | 10.84 |
| Natural Gas 6/ | 10.40 | 11.05 | 11.25 | 11.41 |
| Metallurgical Coal | 0.69 | 0.65 | 0.60 | 0.56 |
| Steam Coal | 1.72 | 1.74 | 1.77 | 1.78 |
| Net Coal Coke Imports | 0.08 | 0.11 | 0.14 | 0.16 |
| Coal Subtotal | 2.49 | 2.50 | 2.51 | 2.50 |
| Renewable Energy 7/ | 2.66 | 2.89 | 3.18 | 3.43 |
| Electricity | 3.73 | 4.02 | 4.17 | 4.27 |
| Delivered Energy | 29.01 | 30.83 | 31.84 | 32.45 |
| Electricity Related Losses... | 7.83 | 8.19 | 8.44 | 8.55 |
| Total | 36.84 | 39.02 | 40.27 | 41.00 |

1/ Includes wood used for residential heating.

2/ Includes ethanol (blends of 10 percent or less) and ethers blended into gasoline.

3/ Includes commercial sector electricity cogenerated by using wood and wood waste, landfill gas, municipal solid waste, and other biomass.

4/ Fuel consumption includes consumption for cogeneration.

5/ Includes petroleum coke, asphalt, road oil, lubricants, still gas, and miscellaneous petroleum products.

6/ Includes lease and plant fuel and consumption by cogenerators; excludes consumption by nonutility generators.

7/ Includes consumption of energy from hydroelectric, wood and wood waste, municipal solid waste, and other biomass; includes cogeneration, both for sale to the grid and for own use.

| | 2005 | 2010 | 2015 | 2020 |
|-------------------------------|--------|--------|--------|--------|
| Transportation | | | | |
| Distillate Fuel | 6.38 | 7.62 | 8.92 | 9.68 |
| Jet Fuel 8/ | 3.88 | 4.46 | 5.12 | 5.82 |
| Motor Gasoline 2/ | 17.60 | 18.63 | 18.94 | 19.07 |
| Residual Fuel | 1.07 | 1.08 | 1.09 | 1.10 |
| Liquefied Petroleum Gas | 0.01 | 0.01 | 0.01 | 0.01 |
| Other Petroleum 9/ | 0.25 | 0.26 | 0.28 | 0.29 |
| Petroleum Subtotal | 29.18 | 32.06 | 34.36 | 35.98 |
| Pipeline Fuel Natural Gas | 0.78 | 0.82 | 0.87 | 0.92 |
| Compressed Natural Gas | 0.05 | 0.14 | 0.24 | 0.33 |
| Renewable Energy (E85) 10/... | 0.02 | 0.03 | 0.03 | 0.03 |
| Liquid Hydrogen | 0.00 | 0.00 | 0.01 | 0.02 |
| Electricity | 0.07 | 0.08 | 0.09 | 0.09 |
| Delivered Energy | 30.09 | 33.13 | 35.61 | 37.38 |
| Electricity Related Losses... | 0.15 | 0.16 | 0.18 | 0.19 |
| Total | 30.24 | 33.30 | 35.78 | 37.57 |
| Electric Generators 13/ | | | | |
| Distillate Fuel | 0.06 | 0.04 | 0.05 | 0.05 |
| Residual Fuel | 0.20 | 0.09 | 0.10 | 0.07 |
| Petroleum Subtotal | 0.26 | 0.13 | 0.15 | 0.12 |
| Natural Gas | 5.11 | 5.64 | 6.66 | 6.93 |
| Steam Coal | 21.24 | 22.16 | 22.53 | 22.63 |
| Nuclear Power | 8.10 | 7.87 | 7.44 | 7.38 |
| Renewable Energy 14/ | 4.22 | 4.99 | 6.03 | 7.61 |
| Electricity Imports | 0.46 | 0.30 | 0.39 | 0.32 |
| Total | 39.38 | 41.09 | 43.21 | 44.99 |
| Total Energy Consumption | | | | |
| Distillate Fuel | 8.83 | 9.97 | 11.17 | 11.82 |
| Kerosene | 0.13 | 0.13 | 0.12 | 0.12 |
| Jet Fuel 8/ | 3.88 | 4.46 | 5.12 | 5.82 |
| Liquefied Petroleum Gas | 3.02 | 3.15 | 3.27 | 3.33 |
| Motor Gasoline 2/ | 17.86 | 18.90 | 19.22 | 19.37 |
| Petrochemical Feedstocks | 1.34 | 1.38 | 1.39 | 1.29 |
| Residual Fuel | 1.57 | 1.52 | 1.56 | 1.53 |
| Other Petroleum 12/ | 4.58 | 5.00 | 5.22 | 5.43 |
| Petroleum Subtotal | 41.20 | 44.50 | 47.08 | 48.72 |
| Natural Gas | 25.68 | 27.50 | 29.43 | 30.75 |
| Metallurgical Coal | 0.69 | 0.65 | 0.60 | 0.56 |
| Steam Coal | 23.07 | 24.03 | 24.43 | 24.53 |
| Net Coal Coke Imports | 0.08 | 0.11 | 0.14 | 0.16 |
| Coal Subtotal | 23.84 | 24.78 | 25.17 | 25.26 |
| Nuclear Power | 8.10 | 7.87 | 7.44 | 7.38 |
| Renewable Energy 15/ | 7.40 | 8.42 | 9.76 | 11.58 |
| Liquid Hydrogen | 0.00 | 0.00 | 0.01 | 0.02 |
| Electricity Imports | 0.46 | 0.30 | 0.39 | 0.32 |
| Total | 106.68 | 113.37 | 119.28 | 124.03 |

8/ Includes only kerosene type.

9/ Includes aviation gas and lubricants.

10/ E85 is 85 percent ethanol (renewable) and 15 percent motor gasoline (nonrenewable).

11/ M85 is 85 percent methanol and 15 percent motor gasoline.

12/ Includes unfinished oils, natural gasoline, motor gasoline blending compounds, aviation gasoline, lubricants, still gas, asphalt, road oil, petroleum coke, and miscellaneous petroleum products.

13/ Includes consumption of energy by all electric power generators for grid-connected power except cogenerators, which produce electricity and other useful thermal energy. Includes small power producers and exempt wholesale generators.

14/ Includes conventional hydroelectric, geothermal, wood and wood waste, municipal solid waste, other biomass, petroleum coke, wind, photovoltaic and solar thermal sources. Excludes cogeneration. Excludes net electricity imports.

17/ Includes hydroelectric, geothermal, wood and wood waste, municipal solid waste, other biomass, wind, photovoltaic and solar thermal sources. Includes ethanol components of E85; excludes ethanol blends (10 percent or less) in motor gasoline. Excludes net electricity imports and nonmarketed renewable energy consumption for geothermal heat pumps, buildings photovoltaic systems, and solar thermal hot water heaters.

Table 2. Energy Prices by Sector and Source
(2000 Dollars per Million Btu, Unless Otherwise Noted)

| | 2005 | 2010 | 2015 | 2020 |
|---------------------------|-------|-------|-------|-------|
| Residential | 13.15 | 13.10 | 13.09 | 12.92 |
| Primary Energy 1/ | 7.25 | 7.09 | 7.17 | 7.03 |
| Petroleum Products 2/ | 9.45 | 9.87 | 10.18 | 10.26 |
| Distillate Fuel | 7.68 | 7.89 | 8.25 | 8.32 |
| Liquefied Petroleum Gas.. | 12.90 | 13.42 | 13.61 | 13.75 |
| Natural Gas | 6.76 | 6.51 | 6.59 | 6.46 |
| Electricity | 22.27 | 22.27 | 21.72 | 21.16 |
| Commercial | 12.65 | 12.20 | 12.09 | 11.63 |
| Primary Energy 1/ | 5.52 | 5.36 | 5.49 | 5.39 |
| Petroleum Products 2/ | 6.10 | 6.34 | 6.65 | 6.72 |
| Distillate Fuel | 5.44 | 5.67 | 6.07 | 6.09 |
| Residual Fuel | 3.74 | 3.83 | 3.92 | 4.01 |
| Natural Gas 3/ | 5.49 | 5.27 | 5.38 | 5.28 |
| Electricity | 19.98 | 19.16 | 18.87 | 18.37 |
| Industrial 4/ | 5.65 | 5.78 | 5.97 | 5.96 |
| Primary Energy | 4.44 | 4.64 | 4.85 | 4.87 |
| Petroleum Products 2/ | 6.36 | 6.71 | 6.97 | 7.05 |
| Distillate Fuel | 5.53 | 5.81 | 6.30 | 6.26 |
| Liquefied Petroleum Gas.. | 8.27 | 8.76 | 8.98 | 9.19 |
| Residual Fuel | 3.56 | 3.64 | 3.73 | 3.85 |
| Natural Gas 5/ | 3.19 | 3.21 | 3.37 | 3.30 |
| Metallurgical Coal | 1.60 | 1.55 | 1.52 | 1.46 |
| Steam Coal | 1.35 | 1.29 | 1.25 | 1.19 |
| Electricity | 12.53 | 12.12 | 12.07 | 11.83 |
| Transportation | 9.53 | 9.76 | 9.62 | 9.61 |
| Primary Energy | 9.51 | 9.74 | 9.59 | 9.60 |
| Petroleum Products 2/ | 9.51 | 9.74 | 9.60 | 9.60 |
| Distillate Fuel 6/ | 9.22 | 10.38 | 10.45 | 11.01 |
| Jet Fuel 7/ | 5.51 | 5.88 | 6.26 | 6.39 |
| Motor Gasoline 8/ | 10.95 | 10.84 | 10.51 | 10.29 |
| Residual Fuel | 3.39 | 3.48 | 3.57 | 3.67 |
| Liquefied Petroleum Gas9/ | 13.97 | 14.43 | 14.54 | 14.42 |
| Natural Gas 10/ | 6.27 | 7.28 | 7.89 | 7.94 |
| Ethanol (E85) 11/ | 19.11 | 20.47 | 20.25 | 20.43 |
| Electricity | 16.54 | 18.00 | 18.89 | 16.97 |

1/ Weighted average price includes fuels below as well as coal.

2/ This quantity is the weighted average for all petroleum products, not just those listed below.

3/ Excludes independent power producers.

4/ Includes cogenerators.

5/ Excludes uses for lease and plant fuel.

6/ Low sulfur diesel fuel. Price includes Federal and State taxes while excluding county and local taxes.

7/ Kerosene-type jet fuel. Price includes Federal and State taxes while excluding county and local taxes.

8/ Sales weighted-average price for all grades. Includes Federal and State taxes and excludes county and local taxes.

9/ Includes Federal and State taxes while excluding county and local taxes.

10/ Compressed natural gas used as a vehicle fuel. Price includes estimated motor vehicle fuel taxes.

11/ E85 is 85 percent ethanol (renewable) and 15 percent motor gasoline (nonrenewable).

Table 2. Energy Prices by Sector and Source (cont.)
(2000 Dollars per Million Btu, Unless Otherwise Noted)

| | 2005 | 2010 | 2015 | 2020 |
|--|--------|--------|--------|--------|
| Electric Generators 13/ | | | | |
| Fossil Fuel Average | 1.53 | 1.48 | 1.55 | 1.51 |
| Petroleum Products | 3.83 | 4.09 | 4.27 | 4.44 |
| Distillate Fuel | 4.92 | 5.16 | 5.56 | 5.53 |
| Residual Fuel | 3.52 | 3.57 | 3.63 | 3.72 |
| Natural Gas | 3.09 | 3.10 | 3.30 | 3.26 |
| Steam Coal | 1.13 | 1.05 | 1.01 | 0.96 |
| Average Price to All Users 14/ | | | | |
| Petroleum Products 2/ | 8.75 | 9.06 | 9.04 | 9.08 |
| Distillate Fuel | 8.39 | 9.45 | 9.73 | 10.26 |
| Jet Fuel | 5.51 | 5.88 | 6.26 | 6.39 |
| Liquefied Petroleum Gas | 9.03 | 9.49 | 9.65 | 9.81 |
| Motor Gasoline 8/ | 10.95 | 10.84 | 10.51 | 10.29 |
| Residual Fuel | 3.46 | 3.54 | 3.63 | 3.73 |
| Natural Gas | 4.38 | 4.29 | 4.43 | 4.38 |
| Coal | 1.15 | 1.07 | 1.03 | 0.98 |
| Ethanol (E85) 11/ | 19.11 | 20.47 | 20.25 | 20.43 |
| Electricity | 18.58 | 18.11 | 17.84 | 17.44 |
| Non-Renewable Energy Expend. by Sector (billion 2000 dollars) | | | | |
| Residential | 150.12 | 150.86 | 153.84 | 156.29 |
| Commercial | 113.63 | 119.78 | 128.95 | 134.92 |
| Industrial | 121.37 | 128.55 | 135.42 | 136.08 |
| Transportation | 279.02 | 314.79 | 333.59 | 350.57 |
| Total Non-Renewable Expend... | 664.14 | 713.99 | 751.81 | 777.87 |
| Trans. Renew. Expenditures... | 0.31 | 0.59 | 0.67 | 0.64 |
| Total Expenditures | 664.45 | 714.58 | 752.48 | 778.50 |

2/ This quantity is the weighted average for all petroleum products, not just those listed below.

8/ Sales weighted-average price for all grades. Includes Federal and State taxes and excludes county and local taxes.

11/ E85 is 85 percent ethanol (renewable) and 15 percent motor gasoline (nonrenewable).

13/ Includes all electric power generators except cogenerators, which produce electricity and other useful thermal energy. Includes small power producers and exempt wholesale generators.

14/ Weighted averages of end-use fuel prices are derived from the prices shown in each sector and the corresponding sectoral consumption.

Table 3. Renewable Energy Generating Capability and Generation
(Gigawatts, Unless Otherwise Noted)

| | 2005 | 2010 | 2015 | 2020 |
|---|--------|--------|--------|--------|
| Elect.Generators (excl.cogen) 1/ Net Summer Capability | | | | |
| Conventional Hydropower | 79.78 | 79.90 | 79.90 | 79.90 |
| Geothermal 2/ | 3.10 | 5.25 | 7.97 | 10.84 |
| Municipal Solid Waste 3/ | 3.53 | 3.93 | 4.21 | 4.42 |
| Wood and Other Biomass 4/ | 1.66 | 1.92 | 2.13 | 2.47 |
| Solar Thermal | 0.34 | 0.36 | 0.39 | 0.41 |
| Solar Photovoltaic | 0.25 | 1.08 | 3.08 | 5.25 |
| Wind | 7.52 | 10.53 | 17.94 | 35.18 |
| Total | 96.18 | 102.96 | 115.62 | 138.47 |
| Generation (billion kwh) | | | | |
| Conventional Hydropower | 301.24 | 301.09 | 300.47 | 299.89 |
| Geothermal 2/ | 16.07 | 33.91 | 56.14 | 79.45 |
| Municipal Solid Waste 3/ | 25.08 | 28.06 | 30.09 | 31.67 |
| Wood and Other Biomass 4/ | 15.09 | 20.19 | 17.62 | 17.58 |
| Dedicated Plants | 9.26 | 11.00 | 12.31 | 14.61 |
| Cofiring | 5.84 | 9.19 | 5.31 | 2.97 |
| Solar Thermal | 0.90 | 0.96 | 1.05 | 1.12 |
| Solar Photovoltaic | 0.46 | 1.98 | 5.62 | 9.55 |
| Wind | 18.73 | 28.80 | 59.03 | 134.22 |
| Total | 377.58 | 415.00 | 470.02 | 573.48 |
| Cogenerators 5/ Net Summer Capability | | | | |
| Municipal Solid Waste | 0.51 | 0.51 | 0.51 | 0.51 |
| Biomass | 5.91 | 6.63 | 7.62 | 8.42 |
| Total | 6.42 | 7.14 | 8.13 | 8.93 |
| Generation (billion kwh) | | | | |
| Municipal Solid Waste | 3.29 | 3.29 | 3.29 | 3.29 |
| Biomass | 33.73 | 38.05 | 44.05 | 48.99 |
| Total | 37.02 | 41.34 | 47.34 | 52.29 |
| Other End-Use Generators 6/ Net Summer Capability | | | | |
| Conventional Hydropower 7/... | 0.98 | 0.98 | 0.98 | 0.98 |
| Geothermal | 0.00 | 0.00 | 0.00 | 0.00 |
| Solar Photovoltaic | 0.08 | 0.08 | 0.08 | 0.08 |
| Total | 1.06 | 1.06 | 1.06 | 1.06 |
| Generation (billion kwh) | | | | |
| Conventional Hydropower 7/... | 4.33 | 4.32 | 4.32 | 4.31 |
| Geothermal | 0.00 | 0.00 | 0.00 | 0.00 |
| Solar Photovoltaic | 0.18 | 0.18 | 0.18 | 0.18 |
| Total | 4.51 | 4.50 | 4.49 | 4.48 |

1/ Includes grid-connected utilities and nonutilities other than cogenerators.
small power producers and exempt wholesale generators.

These nonutility facilities include

2/ Includes hydrothermal resources only (hot water and steam).

3/ Includes landfill gas.

4/ Includes projections for energy crops after 2010.

5/ Cogenerators produce electricity and other useful thermal energy.

6/ Includes small on-site generating systems in the residential, commercial, and industrial sectors used primarily for own-use generation, but which may also sell some power to the grid. Excludes off-grid photovoltaics and other generators not connected to the distribution or transmission systems.

7/ Represents own-use industrial hydroelectric power.

Table 4. Carbon Dioxide Emissions by Sector and Source
(Million Metric Tons Carbon Equivalent, Unless Otherwise Noted)

| | 2005 | 2010 | 2015 | 2020 |
|--------------------------|--------|--------|--------|--------|
| Residential | | | | |
| Petroleum | 25.8 | 24.0 | 22.4 | 21.0 |
| Natural Gas | 79.5 | 81.1 | 82.6 | 84.7 |
| Coal | 1.2 | 1.3 | 1.3 | 1.3 |
| Electricity | 219.6 | 219.8 | 226.2 | 230.0 |
| Total | 326.0 | 326.3 | 332.5 | 336.9 |
| Commercial | | | | |
| Petroleum | 13.1 | 13.1 | 13.0 | 13.1 |
| Natural Gas | 55.0 | 60.6 | 67.2 | 76.0 |
| Coal | 1.7 | 1.8 | 1.9 | 2.0 |
| Electricity | 216.9 | 234.6 | 248.9 | 254.1 |
| Total | 286.7 | 310.2 | 331.0 | 345.2 |
| Industrial 1/ | | | | |
| Petroleum | 97.7 | 104.4 | 106.7 | 106.5 |
| Natural Gas 2/ | 147.3 | 156.7 | 159.3 | 161.7 |
| Coal | 63.1 | 63.3 | 63.7 | 63.5 |
| Electricity | 182.8 | 193.7 | 197.5 | 194.5 |
| Total | 490.8 | 518.1 | 527.1 | 526.2 |
| Transportation | | | | |
| Petroleum 3/ | 559.3 | 615.1 | 659.7 | 691.0 |
| Natural Gas 4/ | 11.9 | 13.8 | 16.1 | 18.0 |
| Other 5/ | 0.1 | 0.1 | 0.1 | 0.1 |
| Electricity | 3.4 | 3.8 | 4.1 | 4.3 |
| Total 3/ | 574.6 | 632.8 | 680.0 | 713.4 |
| Total by Delivered Fuel | | | | |
| Petroleum 3/ | 695.8 | 756.6 | 801.9 | 831.6 |
| Natural Gas | 293.7 | 312.2 | 325.1 | 340.4 |
| Coal | 66.0 | 66.5 | 66.8 | 66.7 |
| Other 5/ | 0.1 | 0.1 | 0.1 | 0.1 |
| Electricity | 622.7 | 652.0 | 676.7 | 682.9 |
| Total 3/ | 1678.2 | 1787.4 | 1870.6 | 1921.7 |
| Electric Generators 6/ | | | | |
| Petroleum | 5.4 | 2.7 | 3.1 | 2.4 |
| Natural Gas | 73.6 | 81.3 | 96.0 | 99.8 |
| Coal | 543.7 | 568.0 | 577.7 | 580.6 |
| Total | 622.7 | 652.0 | 676.7 | 682.9 |
| Total by Primary Fuel 7/ | | | | |
| Petroleum 3/ | 701.2 | 759.3 | 804.9 | 834.0 |
| Natural Gas | 367.3 | 393.5 | 421.1 | 440.2 |
| Coal | 609.6 | 634.5 | 644.5 | 647.3 |
| Other 5/ | 0.1 | 0.1 | 0.1 | 0.1 |
| Total 3/ | 1678.2 | 1787.4 | 1870.6 | 1921.7 |

1/ Includes consumption by cogenerators.

2/ Includes lease and plant fuel.

3/ This includes international bunker fuel which, by convention are excluded from the international accounting of carbon dioxide emissions.

4/ Includes pipeline fuel natural gas and compressed natural gas used as vehicle fuel.

5/ Includes methanol and liquid hydrogen.

6/ Includes all electric power generators except cogenerators, which produce electricity and other useful thermal energy. Includes small power producers and exempt wholesale generators. Does not include emissions from the nonbiogenic component of municipal solid waste because under international guidelines these are accounted for as waste not energy.

7/ Emissions from electric power generators are distributed to the primary fuels.